

## CLAIMS

What is claimed is:

- 1           1.       A system for measuring pressure, the system comprising:  
2           a coupling device;  
3           a pressure-conveyance media responsive to external pressure on the coupling device;  
4           a pressure sensor operable to sense a pressure of the pressure-conveyance media;  
5           a temperature sensor operable to sense a temperature of the pressure-conveyance  
6 media; and  
7           a processor operable to determine external pressure on the coupling device based on  
8 the pressure of the pressure-conveyance media and the temperature of the pressure-  
9 conveyance media.
- 1           2.       The system of claim 1, wherein the coupling device comprises a seal in which  
2 the pressure-conveyance media is at least partially disposed, the seal adapted to couple to a  
3 process and to mechanically respond to pressure exerted by a process media.
- 1           3.       The system of claim 2, wherein the seal comprises a diaphragm that is  
2 operable to mechanically respond to pressure exerted by a process media and to convey the  
3 response to the pressure-conveyance media.
- 1           4.       The system of claim 1, wherein the pressure-conveyance media comprises  
2 glycerin.
- 1           5.       The system of claim 1, wherein the pressure sensor comprises a piezo-type  
2 sensor.
- 1           6.       The system of claim 1, wherein the temperature sensor comprises a resistive  
2 temperature device.

1           7.     The system of claim 1, wherein the processor is further operable to generate a  
2 signal representing the determined pressure.

1           8.     The system of claim 7, further comprising a visual output device operable to  
2 display an indicia representing the determined external pressure based on the generated  
3 signal.

1           9.     The system of claim 1, wherein determining external pressure on the coupling  
2 device based on the pressure of the pressure-conveyance media and the temperature of the  
3 pressure-conveyance media comprises compensating the pressure of the pressure-conveyance  
4 media based on the temperature of the pressure-conveyance media and determining external  
5 pressure on the coupling device based on the compensated pressure of the pressure-  
6 conveyance media.

1           10.    A system for measuring pressure, the system comprising:  
2           a coupling device comprising a diaphragm mechanically responsive to external  
3   pressure;  
4           a pressure-conveyance media disposed at least in part in the coupling device and  
5   responsive to the diaphragm;  
6           a pressure sensor positioned to sense a pressure of the pressure-conveyance media;  
7           a temperature sensor positioned to sense a temperature of the pressure-conveyance  
8   media; and  
9           a processor operable to determine external pressure on the diaphragm based on the  
10   pressure of the pressure-conveyance media and the temperature of the pressure-conveyance  
11   media.

1           11.     A system for measuring pressure, the system comprising:  
2           a pressure sensor;  
3           a coupling device operable to link the pressure sensor with a process media;  
4           a pressure-conveyance media at least partially disposed in the coupling device for  
5     conveying pressure changes of the process media to the pressure sensor;  
6           a temperature sensor operable to sense a temperature of the pressure-conveyance  
7     media; and  
8           a processor operable to determine a pressure of the process media based on the  
9     pressure of the pressure-conveyance media and the temperature of the pressure-conveyance  
10    media.

1           12.     A method for measuring pressure, the method comprising:  
2                 determining a pressure of a pressure-conveyance media;  
3                 determining a temperature of the pressure-conveyance media; and  
4                 determining pressure externally exerted on the pressure-conveyance media by a  
5     process media based on the pressure of the pressure conveyance-media and the temperature  
6     of the pressure-conveyance media.

1           13.     The method of claim 12, wherein determining pressure externally exerted on  
2     the pressure-conveyance media by a process media based on the pressure of the pressure  
3     conveyance-media and the temperature of the pressure-conveyance media comprises  
4     compensating at least one of the pressures for the temperature of the pressure-conveyance  
5     media.

1           14.     The method of claim 13, wherein determining pressure externally exerted on  
2     the pressure-conveyance media by a process media based on the pressure of the pressure  
3     conveyance-media and the temperature of the pressure-conveyance media comprises  
4     compensating the pressure of the pressure-conveyance media based on the temperature of the  
5     pressure-conveyance media and determining the externally exerted pressure using the  
6     compensated pressure.

1           15.     The method of claim 12, further comprising determining an indicia  
2     representing the determined external pressure, the indicia for display by a visual output  
3     device.

1           16.     The method of claim 15, further comprising displaying the indicia.

1           17.     The method of claim 12, wherein determining a pressure of a pressure-  
2     conveyance media comprises determining the amplitude of a signal representing the pressure  
3     of the pressure-conveyance media.

1           18.    The method of claim 12, wherein determining a temperature of the pressure-  
2 conveyance media comprises determining the amplitude of a signal representing the  
3 temperature of the pressure-conveyance media.

1           19.    The method of claim 12, further comprising determining whether it is time to  
2 update a visual output device.

1           20.    A system for pressure measurement, the system comprising:  
2           means for determining a pressure of a pressure-conveyance media;  
3           means for determining a temperature of the pressure-conveyance media;  
4           means for determining pressure externally exerted on the pressure-conveyance media  
5    by a process media based on the pressure of the pressure conveyance-media and the  
6    temperature of the pressure-conveyance media.

1           21.    The system of claim 20, wherein determining pressure externally exerted on  
2    the pressure-conveyance media by a process media based on the pressure of the pressure  
3    conveyance-media and the temperature of the pressure-conveyance media comprises  
4    compensating at least one of the pressures for the temperature of the pressure-conveyance  
5    media.

1           22.    The method of claim 21, wherein determining pressure externally exerted on  
2    the pressure-conveyance media by a process media based on the pressure of the pressure  
3    conveyance-media and the temperature of the pressure-conveyance media comprises  
4    compensating the pressure of the pressure-conveyance media based on the temperature of the  
5    pressure-conveyance media and determining the externally exerted pressure using the  
6    compensated pressure.

1           23.    The system of claim 20, further comprising means for determining an indicia  
2    representing the determined external pressure, the indicia for display by an output device.

1           24.    The system of claim 23, further comprising means for displaying the indicia.

1           25.    The system of claim 20, further comprising means for determining whether it  
2    is time to update a visual output device.

1           26.     A system for measuring pressure, the system comprising:  
2                 a seal comprising a diaphragm that is operable to mechanically respond to externally-  
3                 applied pressure of a process media;  
4                 a pressure-conveyance media at least partially disposed in the seal, the pressure of  
5                 the pressure-conveyance media responsive to the mechanical response of the diaphragm;  
6                 a strain-gauge pressure sensor coupled to the pressure-conveyance media and  
7                 operable to sense a pressure of the pressure-conveyance media and to generate a signal  
8                 representative thereof;  
9                 a thermocouple temperature sensor coupled to the pressure-conveyance media and  
10                operable to sense a temperature of the pressure-conveyance media and to generate a signal  
11                representative thereof;  
12                a microprocessor coupled to the pressure sensor and the temperature sensor, the  
13                microprocessor operable to:  
14                    determine the pressure of the pressure-conveyance media based on the signal  
15                    generated by the pressure sensor,  
16                    determine the temperature of the pressure-conveyance media based on the  
17                    signal generated by the temperature sensor,  
18                    compensate the pressure of the pressure-conveyance media based on the  
19                    temperature of the pressure-conveyance media,  
20                    determine the pressure exerted externally on the diaphragm by the process  
21                    media using the compensated pressure of the pressure-conveyance media,  
22                    determine an indicia representing the pressure exerted externally on the  
23                    diaphragm by the process media,  
24                    generate a signal representing the indicia, and  
25                    generate a signal representing the pressure exerted externally on the  
26                    diaphragm by the process media; and  
27                 a visual output device coupled to the microprocessor, the visual output device  
28                 operable to display the indicia representing the pressure exerted externally on the diaphragm  
29                 by the process media based on the signal generated by the processor.